CLAIMS

WHAT IS CLAIMED:

1. A method comprising:

forming a layer comprised of a refractory metal;

determining a thickness of said layer of refractory metal;

converting a portion of said layer of refractory metal to a metal silicide;

determining a duration of an etching process to remove unreacted portions of said refractory metal layer based upon said determined thickness of said refractory metal layer; and

performing said etching process for said determined duration to remove said unreacted portions of said refractory metal layer.

2. The method of claim 1, wherein forming a layer comprised of a refractory metal comprises depositing a layer comprised of a refractory metal.

3. The method of claim 1, wherein forming a layer comprised of a refractory metal comprises forming a layer comprised of a refractory metal comprised of at least one of cobalt, titanium, tantalum and nickel.

4. The method of claim 1, wherein forming a layer comprised of a refractory metal comprises forming a layer comprised of a refractory metal above a plurality of source/drain regions and a gate electrode of a transistor.

5. The method of claim 1, wherein determining a thickness of said layer of refractory metal comprises determining a thickness of said layer of refractory metal based upon a single measurement of said layer of refractory metal.

6. The method of claim 1, wherein determining a thickness of said layer of refractory metal comprises determining a thickness of said layer of refractory metal based upon multiple measurements of said layer of refractory metal.

7. The method of claim 1, wherein determining a thickness of said layer of refractory metal comprises determining an average thickness of said layer of refractory metal.

8. The method of claim 1, wherein converting a portion of said layer of refractory metal to a metal silicide comprises performing at least one anneal process to convert a portion of said layer of refractory metal to a metal silicide.

9. The method of claim 1, wherein converting a portion of said layer of refractory metal to a metal silicide comprises performing at least two anneal processes to convert a portion of said layer of refractory metal to a metal silicide.

10. The method of claim 1, wherein determining a duration of an etching process to remove unreacted portions of said refractory metal layer based upon said determined thickness of said refractory metal layer comprises calculating a duration of an etching process to remove unreacted portions of said refractory metal layer based upon said determined thickness of said refractory metal layer.

11. The method of claim 1, wherein determining a duration of an etching process to remove unreacted portions of said refractory metal layer based upon said determined thickness of said refractory metal layer comprises selecting a duration of an etching process to remove unreacted portions of said refractory metal layer from a database that correlates the duration of the etching process to said determined thickness of said refractory metal layer.

12. A method comprising:

depositing a layer comprised of a refractory metal above a plurality of source/drain regions and a gate electrode of a transistor;

determining a thickness of said layer of refractory metal;

converting a portion of said layer of refractory metal to a metal silicide by performing at least one anneal process;

determining a duration of an etching process to remove unreacted portions of said refractory metal layer based upon said determined thickness of said refractory metal layer; and

performing said etching process for said determined duration to remove said unreacted portions of said refractory metal layer.

13. The method of claim 12, wherein depositing a layer comprised of a refractory metal comprises depositing a layer comprised of a refractory metal comprised of at least one of cobalt, titanium, tantalum and nickel.

14. The method of claim 12, wherein determining a thickness of said layer of refractory metal comprises determining a thickness of said layer of refractory metal based upon a single measurement of said layer of refractory metal.

15. The method of claim 12, wherein determining a thickness of said layer of refractory metal comprises determining a thickness of said layer of refractory metal based upon multiple measurements of said layer of refractory metal.

16. The method of claim 12, wherein determining a thickness of said layer of refractory metal comprises determining an average thickness of said layer of refractory metal.

17. The method of claim 12, wherein converting a portion of said layer of refractory metal to a metal silicide by performing at least one anneal process comprises converting a portion of said layer of refractory metal to a metal silicide by performing at least two anneal processes.

18. The method of claim 12, wherein determining a duration of an etching process to remove unreacted portions of said refractory metal layer based upon said determined thickness of said refractory metal layer comprises calculating a duration of an etching process to remove unreacted portions of said refractory metal layer based upon said determined thickness of said refractory metal layer.

19. The method of claim 12, wherein determining a duration of an etching process to remove unreacted portions of said refractory metal layer based upon said determined thickness of said refractory metal layer comprises selecting a duration of an etching process to remove unreacted portions of said refractory metal layer from a database that correlates the duration of the etching process to said determined thickness of said refractory metal layer.

20. A system, comprising:

a process tool for forming a layer of refractory metal above a plurality of source/drain regions and a gate electrode of a transistor;

a metrology tool, said metrology tool adapted for determining a thickness of said layer of refractory metal;

an etching tool for performing an etching process to remove unreacted portions of said refractory metal layer after portions of the refractory metal layer have been converted to a metal silicide; and

a controller that determines a duration of said etching process based upon said thickness determined by said metrology tool.

21. The system of claim 20, wherein said process tool is a deposition tool.

22. The system of claim 20, wherein said metrology tool is an acoustic wave metrology tool.

23. The system of claim 20, wherein said metrology tool determines an average thickness of said layer of refractory metal.

24. The system of claim 20, wherein said metrology tool determines a thickness based upon a single measurement of said refractory metal layer.

25. The system of claim 20, wherein said metrology tool determines a thickness based upon multiple measurements of said refractory metal layer.

26. The system of claim 20, wherein said controller is a stand-alone controller.

27. The system of claim 20, wherein said controller is coupled to said etching tool.